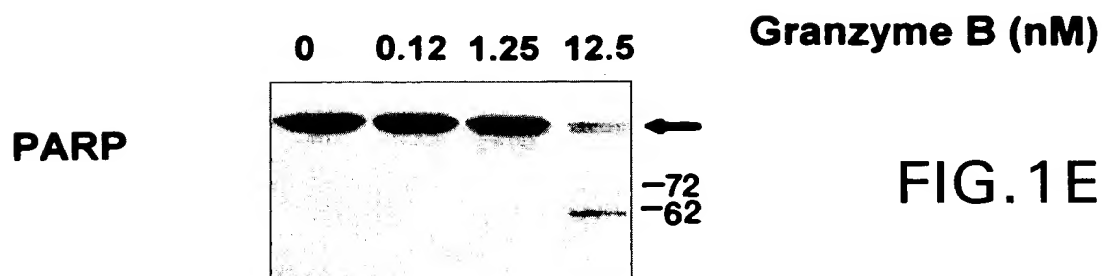
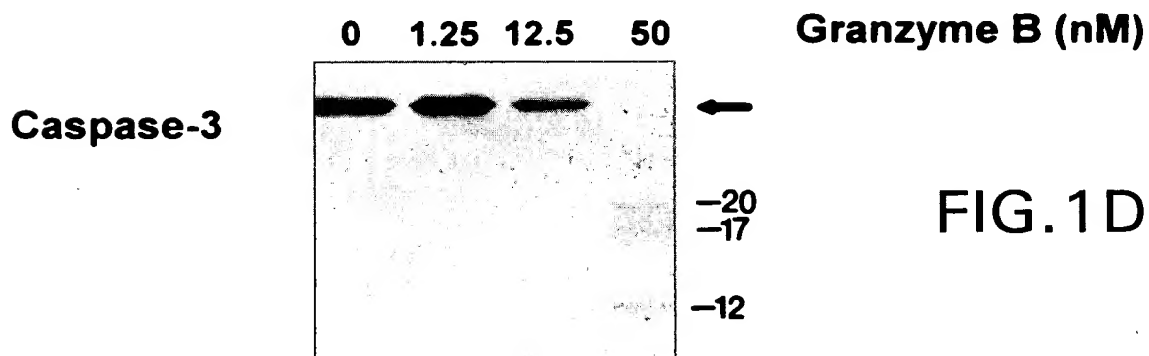
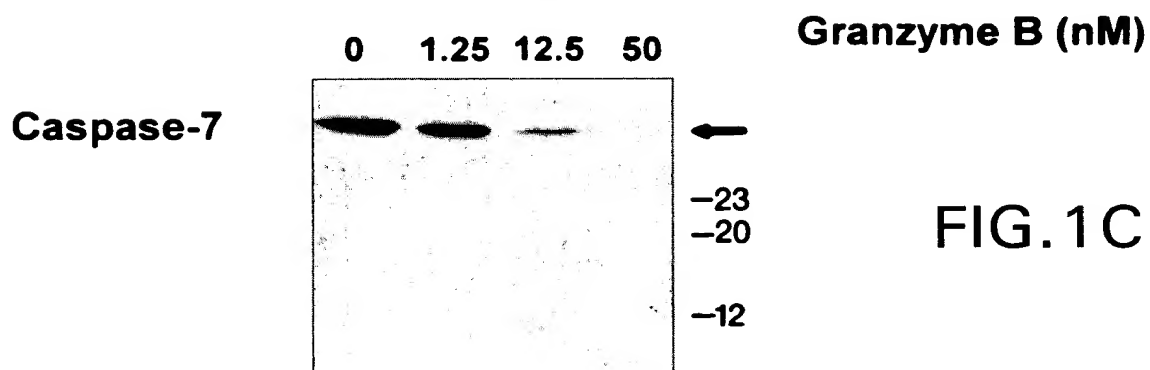
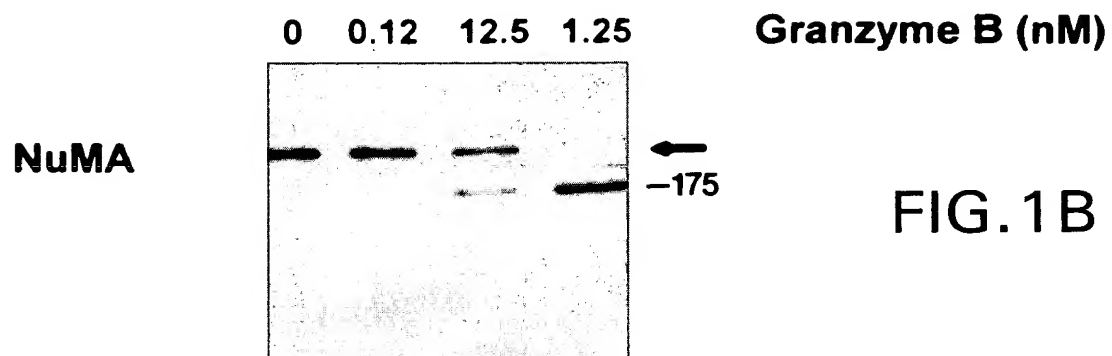
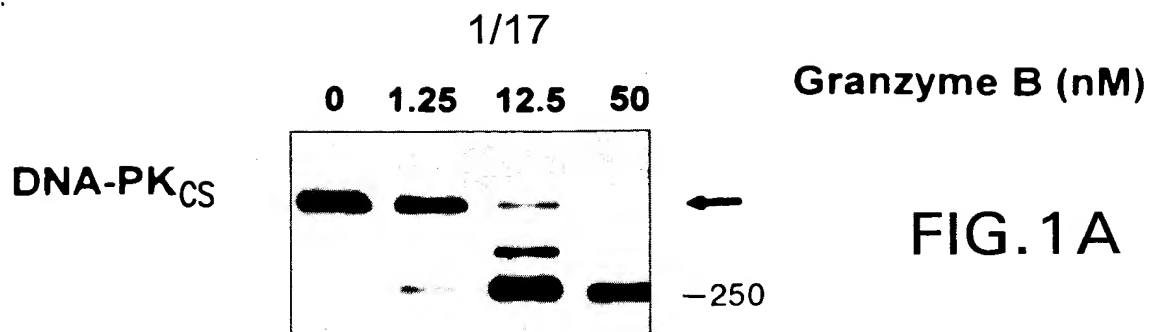




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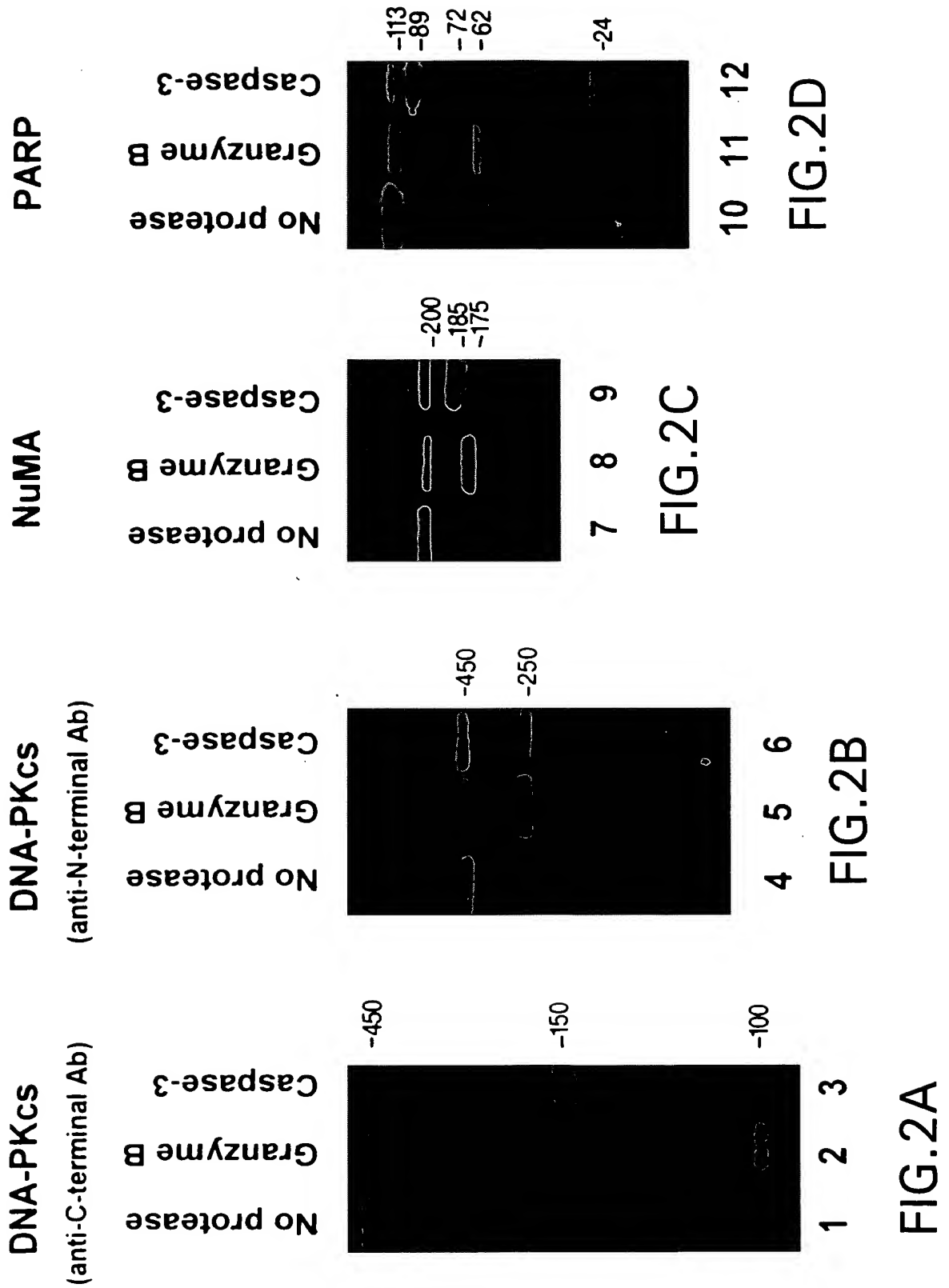
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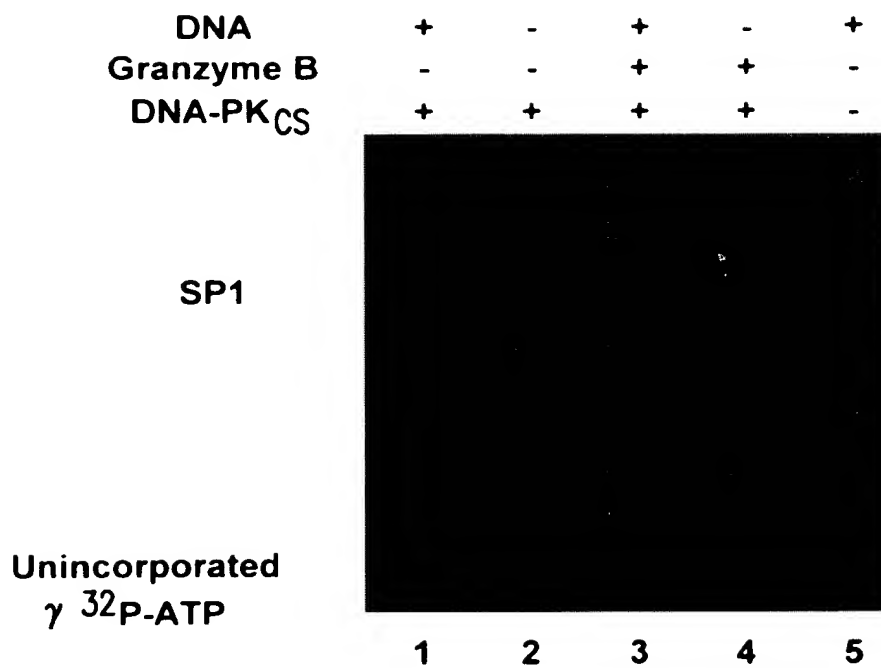


FIG.3

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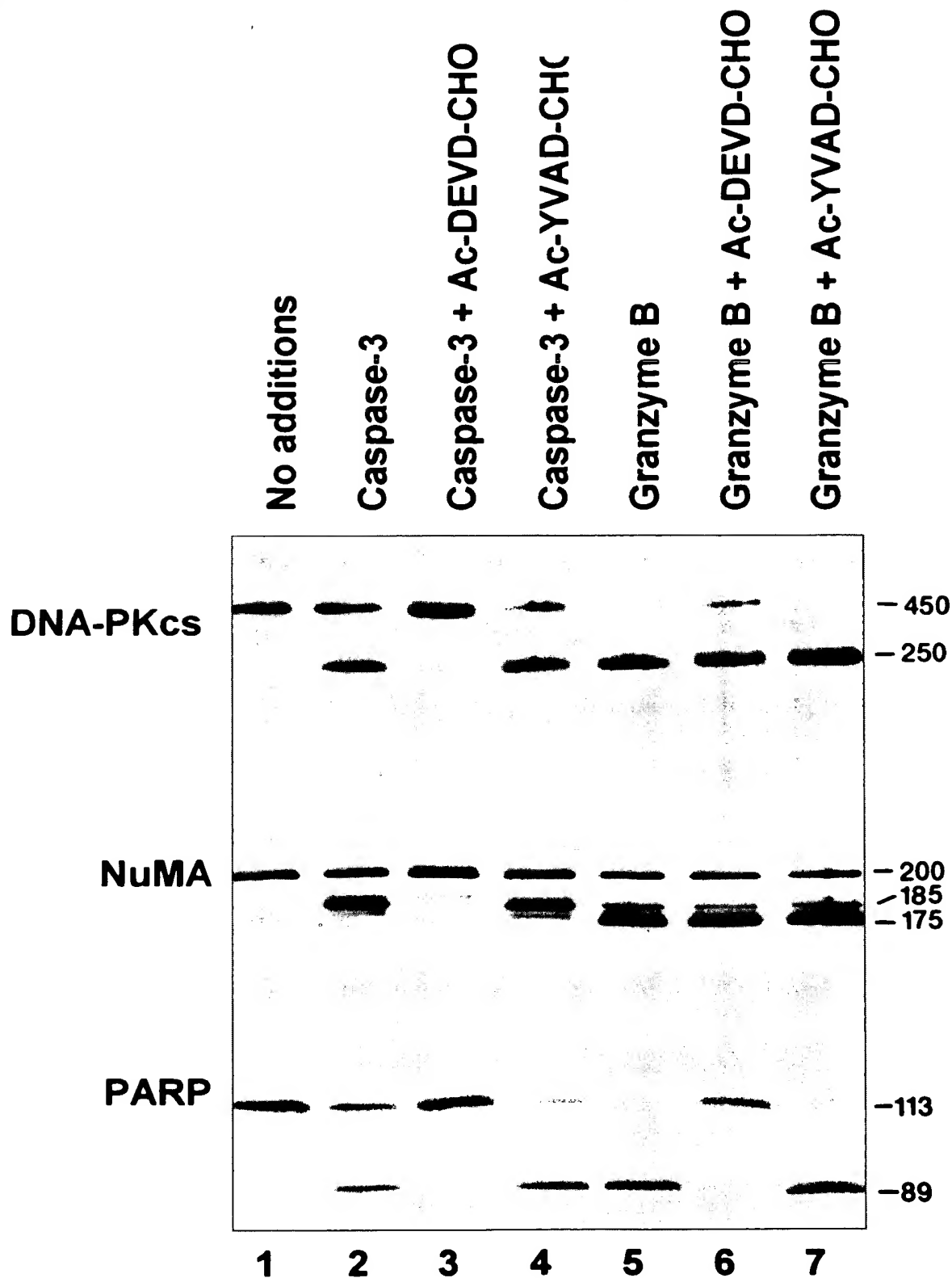
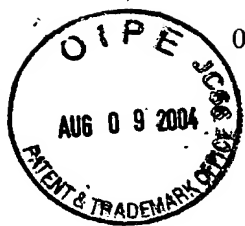


FIG.4

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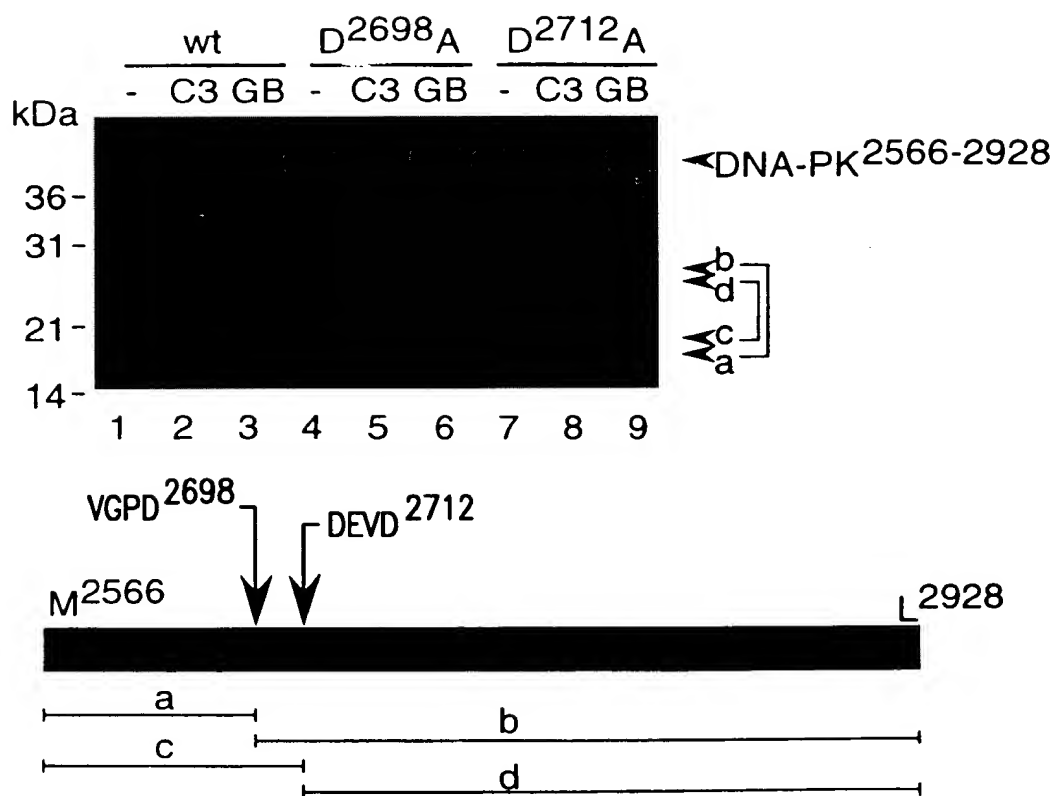


FIG.5

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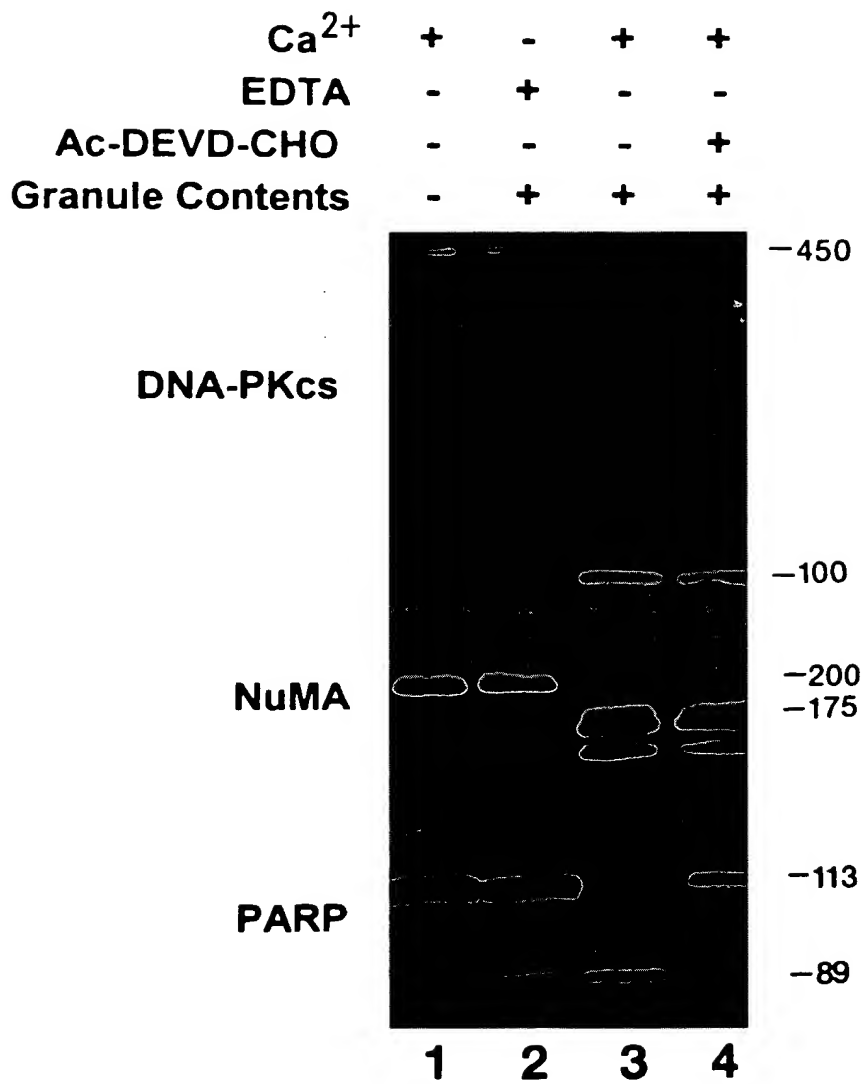


FIG.6

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LAK	+	-	+	+
K562	-	+	+	+
DEVD	-	-	-	+

DNA-PK<sub>CS</sub>

PARP

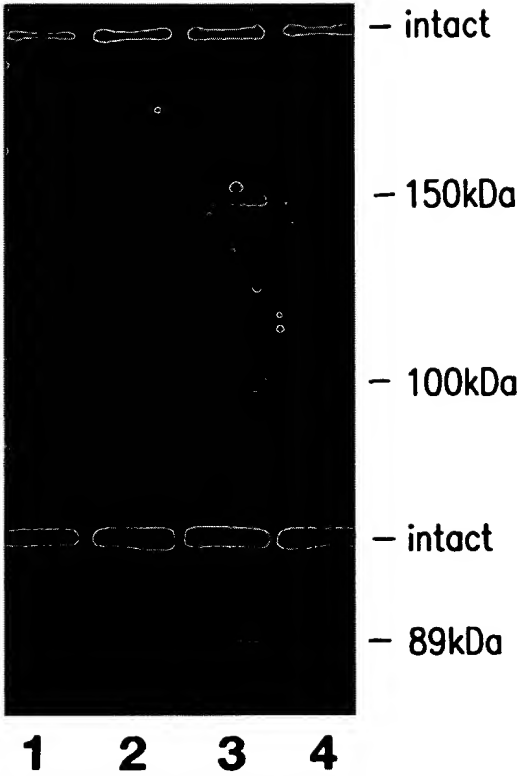


FIG.7

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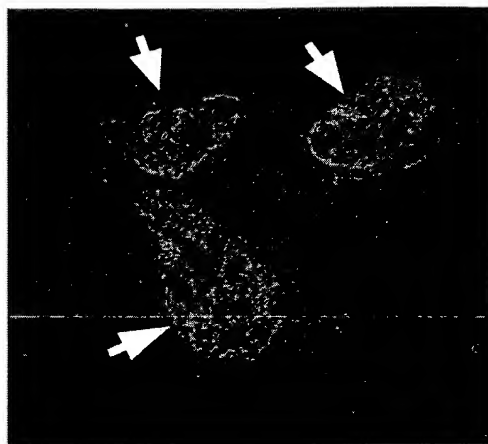


FIG.8C



FIG.8B



FIG.8A

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REPLACEMENT SHEET

9/17

LOCUS 284337 2101 aa 12-APR-1996  
DEFINITION NuMA protein - human.  
ACCESSION 284337  
PID g284337  
DBSOURCE PIR:locus A42184  
summary: #length 2101 #molecular-weight 236296 #checksum 8715.  
PIR dates: 31-Dec-1993 #sequence\_revision 31-Dec-1993#text\_change  
12-Apr-1996.  
KEYWORDS .  
SOURCE human.  
ORGANISM Homo sapiens  
Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;  
Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae;  
Homo.  
REFERENCE 1 (residues 1 to 2101)  
AUTHORS Compton,D.A., Szilak,I. and Cleveland,D.W.  
TITLE Primary structure of NuMA, an intranuclear protein that defines a  
novel pathway for segregation of proteins at mitosis  
JOURNAL J. Cell Biol. 116 (6), 1395-1408 (1992)  
MEDLINE 92176238  
REFERENCE 2 (residues 1 to 2101)  
AUTHORS Tang,T.K., Tang,C.J., Chen,Y.L. and Wu,C.W.  
TITLE Nuclear proteins of the bovine esophageal epithelium.II. The NuMA  
gene gives rise to multiple mRNAs and gene products reactive with  
monoclonal antibody W1  
JOURNAL J. Cell. Sci. 104 (Pt 2), 249-260 (1993)  
MEDLINE 93280231  
REFERENCE 3 (residues 1 to 2101)  
AUTHORS Harborth,J., Weber,K. and Osborn,M.  
TITLE Epitope mapping and direct visualization of the parallel,  
in-register arrangement of the double-stranded coiled-coil in the  
NuMA protein  
JOURNAL EMBO J. 14 (11), 2447-2460 (1995)  
MEDLINE 95300777  
FEATURES Location/Qualifiers  
source 1..2101  
/organism="Homo sapiens"  
/db\_xref="taxon:9606"  
Protein 1..2101  
/product="NuMA protein"

FIG.9A



1 mtlhatrgaa llswvnslhv adpveavlql qdcsifikii drihgteegq qilqpvser  
61 ldfvcsflqk nrkhpsspec lvsqkvleg selelakmtm llyhstms kspdwefq  
121 ykiquelavi lkfvldhedg lnlnedlenf lqkpvstc sstfpeels pshqakreir  
181 flqlkvass ssgnnflsgs paspmgdilq tpqfmrrlk kqladersnr delelelaen  
241 rklitekdaq iammqgridr lallnekqaa splekelee lrdknesltm rihetlkqcq  
301 dlkteksqmd rkinqlseen gdlsklref ashllqlqda lnelttehs atqewlekqa  
361 qlekeltaal qdkkcleeen eilqgklsq eehlsqldn ppqekgevlg dvlqletlkq  
421 eaatlant qlgarvemle terqqeakl laerghfee kqqlsslitd lqssisnlsq  
481 akeeeqasq ahgarltaqv asltsettl natiqqdqde laglkqqake kqaqlaqlq  
541 qqeqasqglr hqveqlsssl kqkeqqlkev aekqeatrqd haqqlatsae ereaslrerd  
601 aalkqleale kekaakleil qqqlqvanea rdsqatsvtq aqrekaelsr kveelqacve  
661 tarqegheaq aqvaelelql rseqqkatek ervaekdql qeqqlalke lkvtkgslee  
721 ekrraadale eqqrciselk aetrslvegh krerkelee ragrklear llqlgeahqa  
781 etevlrrela eamaaqhtae seceqlvkev aawrdgyeds qqeeaqygam fqeqlmtlke  
841 ecekarqelq eakekvagie shselqisrq qnklaelhan laralqqvqe kevraqklad  
901 dlstlqekma atskevarle tlvrkageqq etasrelvke paragdrqpe wleeqqgrqf  
961 cstqaalqam ereaegmgne lerlraalme sqqqqqeerg qqerevarlt qergraqadl  
1021 alekaarael emrlqalne qrvefatlqe alahalteke gkdqelaklr glesaqikel  
1081 eelratvkl keglakkeke hasgsaqse aagrtptgp klealraevs kleqqcqkq  
1141 eqadslersl eaerasraer dsaletlqq leekaqelgh sqsalasaqr elaafrtkvq  
1201 dhskaedewk aqvargrqa erknsliissl eevsilnrq vlekegeske lkrlvmaese  
1261 ksqkleesca ccrqrqpatv pelqnaallc grrcrasgre aekgrvasen lrgeltsqae  
1321 raeelqgelk awqekffqke qalstlqleh tstqalvsel lpakhlcqql qaeqaaekr  
1381 hreeleqskq aagglraell raqrelgeli plrqkvaee rtaqqlraek asyaeqlsml  
1441 kkahgliae nrglgeranl grqfleveld qarekyvqel aavradaetr laevqreaqs  
1501 tarelevmta kyegakvkvl eerqrfqeer qltaqveel skkladsdqa skvqqklka  
1561 vqagggesqq eagrfaqln elqaqlsqke qaashyklqm ekakthydak kqqnqlqeq  
1621 lrsleqlqke nkelraeaer lghelqaagl ktkeaeqtr hltaqvrsle aqvahadqql  
1681 rdlgkfqvaf dalksrepqa kpqldlsids ldlisceegtp lsitsklprt qpdgtsvpge  
1741 paspisqrlp pkveslesly ftpiparsqa plessldslg dvfldsgrkt rsarrttqi  
1801 initmtkkld veepdsanss fystrsapas qaslratsst qslarlgspd ygnsalislp  
1861 gyrpttrssa rrsqagvssg appgrnsfym gtcqdepegl ddwnriaelq qnrvcpphl  
1921 ktcyplesrp slslgtitde emktgdpqet lrrasmapiq iaegtgittr qqrkrvslep  
1981 hqpgtpeesk katscfprpm tprdrhegrk qstteaakka apastkqadr qsmefslin  
2041 tpkklgnsll rrgaskkals kaspntrsgt rrspriattd asaataaig atprakgak  
2101 h

FIG.9B



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# REPLACEMENT SHEET

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LOCUS 107227 2115 aa10-NOV-1995

DEFINITION NuMA protein - human.

ACCESSION 107227

PID g107227

DBSOURCE PIR: locus S23647

summary: #length 2115 #molecular-weight 238273 #checksum 4391.

PIR dates: 19-Feb-1994 #sequence\_revision 10-Nov-1995 #text\_change 10-Nov-1995.

KEYWORDS

SOURCEhuman.

ORGANISM Homo sapiens

Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;

Vertebrata; Mammalia; Eutheria; Primates; Catarrhini; Hominidae;

Homo.

REFERENCE 1 (residues 1 to 2115)

AUTHORS Yang,C.H., Lambie,E.J. and Snyder,M.

TITLE NuMA: an unusually long coiled-coil related protein in the mammalian nucleus

JOURNAL J. Cell Biol. 116 (6), 1303-1317 (1992)

MEDLINE 92176231

FEATURES Location/Qualifiers

source 1..2115

/organism="Homo sapiens"

/db\_xref="taxon:9606"

Protein 1..2115

/product="NuMA protein"

FIG.10A



1 mtlhatrgaa llswvnslhv adpveavlql qdcsifikii drihgteegq qilkaqvser  
61 ldfvcsflqk nrkhpsspec lvsqkvleg selelakmtm lll yhstms kspdwef  
121 ykilaelavi lkfvldhedg lnlnedlenf lqkapvpstc sstfpeels pshqakreir  
181 flelqkvass sagnnflsgs paspmgdilq tpqfqmrrk kqladersnr delelelaen  
241 rklltekdaq iammqgridr lallnekqaa splepkelee lrdknesltm rihetlkqcq  
301 dlkteksqmd rkinqlseen gdlsfklref ashlaqlqda lnelttehs kCqewlekqa  
361 qlekelsaal qdkkcleeen eilqgklsq eehlsqldn ppqekgevlg dvlqletlkq  
421 eaatlant qiqarvemle terqqeakl laerghfeee kqqlsslitd lqssisnlsq  
481 akeeleqasq ahgarltaqv asltsettl natiqqdqde laglkqqake kqaqlaqlq  
541 qqeqasqqlr hqveqlsssl kqkeqqlkev aekqeatrqd haqqlataae ereaslrerd  
601 aalkqleale kskaakleil qqqlqvanea rdsaqtsvtq aqrekaelsr kveelqacve  
661 tarqeqheaq aqvaelelql rseqqkatek ervaekdql qeqlqalke lkvtkgslee  
721 ekrraadale eqqrciselk aetrslveqh krerkelee ragrkglear lqqlgeahqa  
781 etevirrela eamsaqhtae seceqlvkev aawreryeds qqeeaqygam fqeqlmtlke  
841 ecekarqelq eakekvagie shselgisrq qnelaelhan laralqqvqe kevraqklad  
901 dlstlqekma atskevarle tlvrkageqq etasrelvke paragdrqpe wleeqqgrqf  
961 cstgaalgam ereaeqmgne lerlraalme sqqqqqeerg qqerevarlt qergraqadl  
1021 alekaarael emrlqalne qrvefatlqe alahalteke gkdqelaklr gleaaqikel  
1081 eelrqtvkql keqlakkoke hasgsqaqse aagrtptgp klealraevs kleqqcqkq  
1141 eqadslersl eaerasraer dsaletlqq leekaqelgh sqsalasaqr elaafrtkvq  
1201 dhskaedewk aqvargrqa erknsllss eeevsilnrq vlekegeske lkr lvmase  
1261 ksqkleerlr llqaetasns araerssal reevqslree aekqrvasen lrgeltsqae  
1321 raeelqgelk awqekffqke qalstlqleh tstqalvsel lpakhlcqq qaeqaaekr  
1381 hreelegskq aagglrael raqrelgeli plrqkvaeqe rtaqqlraek asyaeqlsml  
1441 kkahgliae nrglgeranl grqflelved qarekyvqel aavradaetr laevqreaqs  
1501 tarelevmta kyegakvkl eerqrfqeer qltaqveql evfqreqlkq veelskkld  
1561 sdqaskvqq klkavqaagg esqqaqrlq aqlnelqael sqkeqasehy klqmekakth  
1621 ydakkqqnqe lqeqlrsloq lqkenkelra eaerlghelq qaglkkeae qtrhltaqv  
1681 rsleaqvaha dqqlrdlgkf qvatdalksr epqakpql d sidsldisce egtplsitsk  
1741 lprtpdgt vpgepaspi qrlppkvesl eslyftpipa rsqaplessl dslgdvfdqs  
1801 grktrsarr ttqiinitmt kkl dveepds anssfysts apasqaslr tsstqslarl  
1861 gspdygnsal lslpgyrptt rssarrsqag vssgappgrn sfymgtcqe peqlddwnri  
1921 aelqqnrvc pphlktcyp esrpslsgt itdeemktgd ppetlrrasm qpiaiaegt  
1981 ittrqqrkv slephqpgt peskkatscf prpmtprdh egrkqsttea qkkaapastk  
2041 qadrrgsmaf silntpkklg nslrrgask kalskaspnt rsgtrrsprl atttasaata  
2101 aaigatprak gkakh

FIG.10B

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LOCUS 1362789 4096 aa 06-SEP-1996  
DEFINITION DNA-activated protein kinase, catalytic subunit - human.  
ACCESSION 1362789  
PID g1362789  
DBSOURCE PIR:locus A57099  
summary: #length 4096 #molecular-weight 465420 #checksum 1795.  
genetic: #gene GDB:PRKDC ##cross-references GDB:234702  
#map\_position 8q11.  
PIR dates: 27-Oct-1995 #sequence\_revision 27-Oct-1995 text\_change  
06-Sep-1996.  
KEYWORDS DNA binding; DNA recombination; DNA repair; nucleus;  
phosphotransferase.  
SOURCE human.  
ORGANISM Homo sapiens  
Eukaryotae; mitochondrial eukaryotes; Metazoa; Chordata;  
Vertebrata; Mammalia; Eutheria; Prunates; Catarrhini; Hominidae;  
Homo.  
REFERENCE 1 (residues 1 to 4096)  
AUTHORS Sipley, J.D., Menninger, J.C., Hartley, K.O., Ward, D.C., Jackson, S.P.  
and Anderson, C.W.  
TITLE Gene for the catalytic subunit of the human DNA-activated protein  
kinase maps to the site of the XRCC7 gene on chromosome 8  
JOURNAL Proc. Natl. Acad. Sci. U.S.A. 92 (16), 7515-7519 (1995)  
MEDLINE 95365397  
REFERENCE 2 (residues 1 to 4096)  
AUTHORS Hartley, K.O., Gell, D., Smith, G.C., Zhang, H., Divecha, N.,  
Connelly, M.A., Admon, A., Lees-Miller, S.P., Anderson, C.W. and  
Jackson, S.P.  
TITLE DNA-dependent protein kinase catalytic subunit: a relative of  
phosphatidylinositol 3-kinase and the ataxia telangiectasia gene  
product  
JOURNAL Cell 82 (5), 849-856 (1995)  
MEDLINE 95401275  
FEATURES Location/Qualifiers  
source 1..4096  
/organism="Homo sapiens"  
/db\_xref="taxon:9606"  
Protein 1..4096  
/note="DNA-PK-cs"  
/product="DNA-activated protein kinase, catalytic subunit"

FIG.11A



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1	magsgagvrc	slrlrlqetls	aadrcgaala	ghqlirglgq	ecvlssspav	lalqtslvfs
61	rdfgllvfv	kslnsiefre	creeilkflc	ifleRmqki	apysveiknt	ctsvytkdra
121	akckipaldl	likllqtfrs	srImdefkig	elfskfygel	alkkkipdtv	lekvyellgl
181	lgevhpsemi	naenlfraf	lgelktqmts	avrepklpv	agclkgssl	lcnftksmee
241	dpgtsreife	fvlkairpqi	dlkryavpsa	glrlfalhas	qfstclldny	vsIfevlikw
301	cahtnvelkk	aalsalesfl	kqvsnmvakn	aemhknklqy	emeqfygiir	nvdsnnkels
361	iairgyglfa	gpokvinakd	vdfmyveliq	rckqmfltqt	dtgdyrvyqm	psflqsvasv
421	llyldtvpev	ytpvlehlv	mqidsfpqys	pkmqlvccra	ivkvflalaa	kpgvlrncis
481	tvvhqgliri	cakpvvlpkg	pesesedhra	sgevtgkwk	vptykdyvd	frhlIssdqm
541	mdsiladeaf	fsvnsssesl	nhllydefvk	svlkivekld	ltleiqtvgeq	engdeapgv
601	wmiptedpaa	nlhpakpkdf	safinlvefc	reilpekqae	ffepwvysfs	yelilqstrl
661	plisgfykll	sitvrnakki	kyfegvspks	lkhspedpek	yscfalfvkf	gkevavkmkq
721	ykdel lascl	tflslphni	ieldvrayvp	alqmafklgl	sytplaevgl	naleewsiyi
781	drhvmqpyyk	dilpcldgyl	ktsalsdetk	nnwevsalsr	aaqkgfnkvv	lkhlkktknl
841	ssneaislee	irirvqamlg	slggqinknl	ltvtssdemm	ksyvawdrek	rlsfavpfre
901	mcpvifldvf	lprvtelalt	asdrqtkvaa	cellhsmvmf	mlgkatqmp	ggggappmyq
961	lykrtfpvll	rlacdvdqvt	rqlyeplvmq	lihwftnnhk	fesqdtvsll	eaildgividp
1021	vdstlrdfcg	rcireflkws	ikqitpqaqe	kspvntkslf	krlyslalhp	nafkrlgasl
1081	afnniyrefr	eeeslveqfv	fealviymes	lalahadeks	lgtiaqqccda	idhlcriiek
1141	khvslnkakk	rrlprgfpps	asclldlvk	wllahcgrpq	tecrhksiel	fykfvpllpq
1201	nrspnlwlkd	vlkeegvsfl	intfeggcg	qpsgilagpt	llylrgpfsl	qatlclwldll
1261	laalecyntf	igertvgalq	vlgteaqssl	lkavaffles	iamhdiiae	kcfgtgaagn
1321	rtspqegery	nyskctvvvr	imeftttlln	tspegwkllk	kdlcnthlmr	vlvqtIcepa
1381	sigfnigdvq	vmahlpdvcv	nlmkalkmsp	ykdiethlr	ekitaqsiee	lcavnlygpd
1441	aqvdrsrll	vvsackqlhr	agllhnlps	qstdlhsvg	tellslykyg	iapgderqcl
1501	psldlsckql	asgllelafa	fgglcerlvs	lllnpavlst	aslgssqgs	ihfshgeyfy
1561	slfsetinte	llknldlav	elmqssvnt	kmvsavlngm	ldqsfreran	qkhqglklat
1621	tilqhwkkcd	swwakdsple	tkmavllala	kilgidssvs	fnshgsfpe	vfttyislla
1681	dtklldhlkg	qavtlpfft	sltggsleel	rrvleqliva	hfpmqsrrefp	pgtprfnnyv
1741	dcmkkfldal	elsqspmlle	lntevlcreq	qhvmeelfqs	sfrriarrgs	cvtqvgllles
1801	vyemfrkddp	rlsftrqsfv	drsltltlwh	csldalreff	stivvdaidv	lksrftklne
1861	stfdtqitkk	mggykildvm	ysrlpkddvh	akeskinqv	hgscitegne	lktklklcy
1921	daftenmage	nqlerrrly	hcaayncais	viccvfnelk	fyqgflfsek	peknllifen
1981	lidlkrrynf	pvevevpmer	kkkyieirke	areaangdsd	gpsymsslsy	ladstlseem
2041	sqdfdstgvq	sysyssqdpr	patgrfrrre	qrdptvhddv	lelemdelnr	hecmaplal
2101	vkhnbrslgp	pqgeedsvpr	dlpswmkflh	gklgnpivpl	nirflaklv	inteevfrpy
2161	akhwlspllq	laasenngge	gihymveiv	atilswtgla	tptgvpkdev	lanrlInflm
2221	khvfhpkrav	frhnleikt	lvecwkdcis	ipyrlifekf	sgkdpnskd	svgiqllgiv
2281	mandlppydp	qcgiqsseyf	qalvnmefv	rykevyaaaa	evlgiliryv	merknilees
2341	lcelvakqlk	qhantmedkf	ivclnkvtks	fppladrfrn	avffllpkfh	gvklcllev
2401	vlcrvegnte	lyfqlkskdf	vqvmrhrder	qkvclidiyk	mmpklkpvel	rellnpvvef
2461	vshpsttcre	qmynilmwih	dnyrdpeset	dndsqeifkl	akdvliaggl	denpgqlii
2521	rnfwshetr	pentldrlla	lnslsypkie	vhflslatnf	llemtsmspd	ypnpmfehpl
2581	secefqeyti	dsdwrfrstv	ltpmfvetqa	sagtlqtrtq	egslsarwpv	agqiratqqq
2641	hdflltqtad	grssfdwltg	sstdplvdht	spssdslifa	hkrserlqra	plksvgpdfg
2701	kkrlglpgde	vdnkvkgaag	rtdllrlrrr	fmrdeklsl	myarkgvaeg	krekeiksel

FIG.11B



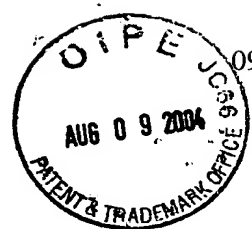
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## REPLACEMENT SHEET

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2761 kmkqdagvvl yrsyrhgdip diqikhssli tpiqavaqrd piakqlfss lfsgilkemd  
2821 kfkltseknn itqklldfn rflnttfsff ppfvsciqdi scqhaallsl dpaavsagcl  
2881 aslqqpvgr lleeallrll paelpakrvr gkarlppdvl rwvelaklyr sigeydvirg  
2941 iftseigtka itqsallaea rsdysesakq ydealnkqdw vdgepteak dfwelaslde  
3001 ynhlaewksl eycstasids enppdlnkiw sepfyqetyl pymirskkl llqgeadqsl  
3061 ltfidkamhg elqkailelh ysqelsllyl lqddvdraky yigngiqsfm qnyssidvll  
3121 hqsrltklqs vqalteiqef isfiskqgnl seqvplkrll ntwnrypda kmdpmniwdd  
3181 iitnrcffls kieekltplp ednsmnvdqd gdpsdrmevq eqeedissli rsckfsmkmk  
3241 midsarkqnn fslamklke lhkesktrdd wlvswvqsy rlschrsrsq gcseqvltvl  
3301 ktvsildenn vssylxknll afrdnillg ttyriianal ssepaclaei eedkarrile  
3361 lsgsssedse kviaglyqra fqlhseavqa aseagppsw scgpaagvid aymtladfc  
3421 qqlrkeeena svtdsaelqa ypalw ekml kalklnsnea rikfprllgi ierypeetls  
3481 lmtkeissvp cwqfiswish mvalldkda vavqhsveei tdnyppaivy pfiissesys  
3541 fkdttghkn kefvariksk ldqggviqdf inalldqsnp ellfkdwnd vraelaktpv  
3601 nkkniekmye rmyaalgdpk apglgafrrk fiqtfgkefd khfgkggskl lrmkl sdfnd  
3661 itnmlilkmn kdsppgnlk ecspwmsdfk veflrnelei pggydgrgkp lpeyhvriag  
3721 fdervtmas lrrpkriir ghderhpfl vkgedlrqd qrveqlfqvm ngilaqdsac  
3781 sqralqlrty svvpmtssdp rappceykdw ltkmsgkhdv gaymlmykga nrtetvtser  
3841 kreskvpadi lkrafvrmst speafalrs hfasshalic ishwiigigd rhlnnfmvam  
3901 etggvigidf ghafgsatqf lpvpelmpfr ltrqfinlml pmketglmys imvhalrafr  
3961 sdpgllntm dvfvkepsfd wknfeqkmlk kggswiqein vaeknwprq kicyakrkla  
4021 ganpavitcd elllghekap afrdyavar gskdhniraq epesqlseet qvkcimdgat  
4081 dpnilgrtwe gwepwm

FIG.11C



09/296,662

# REPLACEMENT SHEET

16/17

LOCUS 130781 1014aa 01-NOV-1997  
DEFINITION POLY (ADP-RIBOSE) POLYMERASE (PARP) (ADPRT)  
(NAD(+)

ADP-RIBOSYLTRANSFERASE) (POLY(ADP-RIBOSE)  
SYNTEHTASE).

ACCESSION 130781

PID gl30781

DBSOURCE SWISS-PROT: locus PPOL\_HUMAN, accession P09874

class: standard.

created: Mar 1, 1989.

sequence updated: Dec 1, 1992.

annotation updated: Nov 1, 1997.

xrefs: gi: 510112, gi: 1017423, gi: 190166, gi: 190167, gi: 337423,

gi: 337424, gi: 178151, gi: 178152, gi: 190266, gi: 190267, gi:

178188, gi: 178190, gi: 189533, gi: 189534, gi: 35286, gi: 825702,

gi: 35288, gi: 189535, gi: 189536, gi: 88229, gi: 88227, gi:

627553, gi: 107162, gi: 107160, gi: 482956, gi: 420073, gi: 107158

xrefs (non-sequence databases): AAR;EIUS/GHENT-2DPAGE 1620,

MIM

173870, MIM 173871, PROSITE PS00347, PROSITE PS50064

KEYWORDS TRANSFERASE; GLYCOSYLTRANSFERASE; NAD; DNA-  
BINDING; NUCLEAR

PROTEIN; ADP-RIBOSYLATION; ZINC-FINGER; ZINC.

SOURCE human.

ORGANISM Homo sapiens

Eukaryotae; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;

Primates; Catarrhini; Hominidae; Homo.

REFERENCE 1 (residues 1 to 1014)

AUTHORS Auer,B., Nagl,U., Herzog,H., Schneider,R. and  
Schweiger,M.

TITLE Human nuclear NAD+ ADP-ribosyltransferase(polymerizing):  
organization of the gene

JOURNAL DNA 8 (8), 575-580 (1989)

MEDLINE 90091744

REMARK SEQUENCE FROM N.A.

REFERENCE 2 (residues 1 to 1014)

AUTHORS Uchida,K, Morita,T., Sato,T., Ogura,T., Yamashita,R.,  
Noguchi,S.,

Suzuki,H., Nyunoya,H., Miwa,M. and Sugimura,T.

TITLE Nucleotide sequence of a full-length cDNA for human fibroblast  
poly(ADP-nbose) polymerase

JOURNAL Biochem. Biophys. Res. Commun. 148 (2), 617~22 (1987)

MEDLINE 88076933

REMARK SEQUENCE FROM N.A.

TISSUE=FIBROBLAST

FIG.12A





# REPLACEMENT SHEET

17/17

1 maessdklyr veyaksgras ckkcsesipk dslrmaimvq spmfdgkvph wyhfscfwkv  
61 ghsirhpdve vdghselrwd dqakvkktae aggvtkgqgd gigskaektl gdfaaeyaks  
121 nrstckgcme kiekqqvrls kkmvdpekpa lgmidrwyhp gcfvknreel gfrpeysasq  
181 lkgfslate dkealkkqlp gvksegkrkg devdgvdeva kkkskkekdk dsklekalka  
241 qndliwnikd elkkvcstnd lkellifnkq qvpegesail drvadgmvfg allpceecag  
301 qlvfkedayy ctgdvtawtk cmvktqtpnr kewvtpkefr eisylkkllkv kkqdrifppe  
361 tsasvaatpp pstasapaav nssasadkpl snmkiltlgk lsrnkdevka mieklggklt  
421 gtankaslc i stkkevekmn kkmeevkean irvvsedflq dvsastkslq elflahilsp  
481 wgaevkaepv evvaprgksg aalskkskgq vkeeginkse krmkltlkkg aavdpdagle  
541 hsahvlekkg kvfeatlplv divkgtnsyy klqlleddke nrywifrawg rvgtvigsnk  
601 legmpskeda iehfmklyee ktgnawhakn ftkypkkfyp leidyggdee avkkltnpg  
661 tksklpkpvq dlikmifdve smkkamveye idlqkmpgk lskrqiaay silsevqqav  
721 sqgssdsqil dlsnrfytli phdfgmkkpp llnnadsvqa kvemldnld ievaysllrg  
781 gsddsskdpi dvnyeklkt ikvvdrdsee aeikirkyvkn thatthnayd levidifkie  
841 regecqrykp fkqlhnrll whgerttnfa gilaaglrta ppeapvtgym fgkgyfadm  
901 vsksanycht sqgdpigll lgevalgnmy elkhashisk lpkgkhsvkq lgkttpdpsa  
961 nislqgvdvp lgtgissqvn dtsllyneyi vydiaqvnk yllklkfnfk tslw

FIG.12B

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